

U.S. System Summary: PACIFIC NORTHWEST



Pacific Northwest High-Speed Rail System (Source: Washington DOT)

The Pacific Northwest high-speed rail system is a proposed system containing 467 miles of routes in three segments encompassing the States of Oregon and Washington, as well as the Canadian province of British Columbia. The three segments of the Pacific Northwest high-speed rail system connect major metropolitan areas of the region including Seattle, WA; Portland, OR; Eugene, OR; and Vancouver, British Columbia. All three segments of the

Pacific Northwest high-speed rail system have advanced to the *Planning/Environmental* stage and are part of the federally-designated Pacific Northwest High-Speed Rail Corridor. The proposed Pacific Northwest high-speed rail system is primarily based on incremental improvements to existing freight railroad right-of-way, with maximum train speeds projected up to 110 mph.

SYSTEM DESCRIPTION AND HISTORY

System Description

The Pacific Northwest high-speed rail system consists of three segments, as summarized below.

Pacific Northwest High-Speed Rail System Segment Characteristics

Segment Description	Distance	Segment Status	Designated Corridor?	Segment Population
Vancouver, BC, to Seattle, WA	157 Miles	Planning/Environmental	Yes	6,071,178
Seattle, WA, to Portland, OR	187 Miles	Planning/Environmental	Yes	6,095,947
Portland, OR, to Eugene, OR	124 Miles	Planning/Environmental	Yes	3,171,668

The three segments of the Pacific Northwest high-speed rail system form a single linear corridor that runs 468 miles from Vancouver, Canada, to Eugene, OR, via Seattle, WA, and Portland, OR. The Vancouver, BC, to Seattle, WA, segment is 157 miles in length and includes Bellingham, WA as well as the northern suburbs of Seattle along the route. The Seattle, WA, to Portland, OR, segment is 187 miles in length and includes the major Washington cities of Tacoma and Olympia (Washington's state capital) along the route. The Portland, OR, to Eugene, OR, route is 124 miles in length and includes the communities of Salem (Oregon's state capital) and Albany along the route. The total combined population of communities along the three segments of the Pacific Northwest high-speed rail system that are currently served by the Amtrak Cascades route was 9,672,975 in 2010.

The three segments of the Pacific Northwest high-speed rail system are a part of the federally-designated Pacific Northwest High-Speed Rail Corridor, which was designated in October 1992.

Development of high-speed intercity passenger rail service in the three segments of the Pacific Northwest high-speed rail system is primarily based on incremental improvements to existing freight railroad right-of-way, owned by the BNSF Railway or the Union Pacific Railroad. On the Portland to Eugene segment, right-of-way owned by the Oregon Electric Railway is also being considered as an alternative.

System History

Development of high-speed intercity passenger rail service in the Pacific Northwest high-speed rail system region dates back to the early 1990s, with the completion of

a feasibility study for a high-speed ground transportation system in the state by the Washington State Department of Transportation (WSDOT) and the designation of the Pacific Northwest High-Speed Rail corridor (both in 1992). In 1994, the State of Washington initiated state financial support for Amtrak service between Seattle and Portland with state-supported Amtrak service between Seattle and Vancouver starting a year later. In 1999, the service became officially known as the Amtrak Cascades. New high-speed diesel train sets built by Renfé Talgo of America, featuring passive tilt technology for faster speeds around curves and premium on-board amenities, were also introduced on the route around this time. Between 1994 and 2005, the State of Washington invested \$270 million for capital projects and operating expenses related to the Amtrak Cascades service.

In February 2006, WSDOT released its *Long-Range Plan for Amtrak Cascades*, which outlined a blueprint for further development of intercity passenger rail between Vancouver, Seattle, and Portland through the year 2023. The *Long-Range Plan* affirmed WSDOT's incremental approach to developing intercity passenger rail in Washington and presented a six-phase incremental capital improvement program that would decrease travel time and increase daily frequency in the corridor. WSDOT followed-up the Long-Range Plan in December 2008 with the release of the *Amtrak Cascades Mid-Range Plan*, which presented three investment options for improving Amtrak Cascades service through the year 2017. WSDOT completed a Tier 1 Environmental Assessment (EA) for its proposed program of infrastructure improvements in September 2009. The Tier 1 EA, which covered the entire length of the Pacific Northwest Rail Corridor within the State of Washington, evaluated three service blocks of improvement packages across the corridor as part of the corridor service expansion alternative. Completion of all three service blocks would result in reduced travel times between Seattle and Portland by 18 minutes and increase frequency to eight daily round-trips.



Amtrak Cascades Service with Talgo Train Sets (Source: Washington DOT/Bruce Ikenberry)

In November 2010, the Federal Railroad Administration issued a Finding of No Significant Impact (FONSI) for the Tier 1 EA, allowing for the corridor service expansion to proceed as funds become available.

Planning for high-speed intercity passenger rail on the Portland to Eugene segment of the Pacific Northwest high-speed rail system dates back to the late 1970s. In January 1977, the Oregon Department of Transportation (ODOT) released the *Willamette Valley Passenger Rail Study* report, which examined the feasibility of rail service up to 100 mph between Portland and Eugene. Additional groundwork for high-speed rail development in the Portland to Eugene segment was laid by ODOT with a series of reports in the early 1990s, including the Oregon Rail Passenger Policy and Plan (1992), the Oregon High Speed Rail Business Plan (1994), and the Oregon High Speed Rail Capacity Analysis (1994). In April 2000, an *Operating/Capital Facilities Plan and Preliminary Environmental Analysis* was completed for the Oregon segment of the Pacific Northwest high-speed rail system.

More recently, the comprehensive *Oregon Rail Study* (2010) provided an updated assessment of implementing high-speed rail on the Portland to Eugene segment. In this study, ODOT stated its goals for intercity passenger rail

service on the Portland to Eugene segment, as follows:

- Increase on-time performance of passenger trains from 68 percent to 95+ percent.
- Increase daily round-trips from two to six or more.
- Increase average passenger train speeds from 42 to 65 mph.
- Reduce Portland to Eugene travel time from 2:35 to 2 hours or less.
- Avoid negative impacts to freight rail capacity and operations.

The Study included ridership forecasts and capital investment strategies to assist in meeting these goals. The Study also examined shifting passenger train operations from Union Pacific Railroad right-of-way to a parallel right-of-way owned by the Oregon Electric Railway. The Oregon Electric route is being considered because the route is more amenable to passenger operations in excess of 79 mph as well as electrification, both of which are desired by ODOT to achieve its goals. In 2011, ODOT initiated a Tier 1 EIS for high-speed intercity passenger rail service between Portland and Eugene. Funding for the Tier 1 EIS was provided in part by a \$5 million grant from the Federal Railroad Administration.



Seattle, Washington

Federally-Designated Corridors

The three segments of the Pacific Northwest high-speed rail system are a part of the federally-designated Pacific Northwest High-Speed Rail Corridor. The Pacific Northwest High-Speed Rail Corridor designation includes Eugene and Portland, OR; Seattle, WA; and Vancouver, Canada. The Pacific Northwest High-Speed Rail Corridor was one of five federally-designated corridors authorized by the *Intermodal Surface Transportation Efficiency Act of 1991* (ISTEA) in December 1991. The designation was made official on October 20, 1992.

Existing Intercity Passenger Rail Service

Existing intercity passenger rail service in the Pacific Northwest high-speed rail system is provided by the Amtrak Cascades route. The existing Amtrak Cascades route covers the full length of the Pacific Northwest high-speed rail system, with four round-trip trains per day between Seattle and Portland and two round-trip trains per day each between Vancouver and Seattle and Portland and Eugene. The Amtrak Coast Starlight long-distance train provides an additional daily round-trip between Seattle, Portland, and Eugene with continuing service south to California. Operation of the Amtrak Cascades route is financially supported by the States of Washington and Oregon. In addition to the rail service, the State of Oregon supports additional service between Portland and Eugene in the form of Amtrak Thruway Bus service.

Sources: 2010 U.S. Census, Long-Range Plan for Amtrak Cascades, Amtrak Cascades Mid-Range Plan, Pacific Northwest Rail Corridor Washington State Segment Program Environmental Assessment, 2010 Oregon Rail Study, Oregon DOT Passenger Rail Program Website, Federal Railroad Administration High-Speed Rail Corridors Chronology, Amtrak System Timetable Fall 2011/Winter 2012

ESTIMATED SYSTEM COSTS AND FUNDING SOURCES

Estimated System Costs

The applications submitted by Washington DOT for ARRA funding under Track 2: Corridor Programs provided cost estimates for the three service blocks of improvement projects for the portions of the Pacific Northwest high-speed rail system within Washington State. Each service block contained a set of projects with independent utility and measurable service targets for the Amtrak Cascades route. A description of each service block, its associated outcomes, and estimated costs is as follows:

- Service Block 1 contains 10 projects that will result in a fifth Amtrak Cascades daily round-trip between Seattle and Portland, improve on-time performance from 62 to 87 percent, and reduce travel time on the route by six minutes. The cost of Service Block 1 was estimated to be \$462,791,026 in 2009.
- Service Block 2 contains the 10 projects from Service Block 1 plus 7 additional projects. These projects

will result in a sixth daily round trip between Seattle and Portland, improves on-time performance to 88 percent, and reduce travel time by an additional 10 minutes. The cost of Service Block 2 was estimated to be \$1,061,523,851 in 2009—an incremental total of \$598,732,825 more than Service Block 1.

- Service Block 3 contains the 17 projects from Service Blocks 1 and 2 plus 8 additional projects. These projects will add two additional daily round-trips between Seattle and Portland (total of 8) and reduce travel time by 2 additional minutes. The cost of Service Block 3 was estimated to be \$1,486,661,257 in 2009—an incremental total of \$425,137,406 more than Service Block 2.

Since the service blocks contain individual projects, it is not appropriate to consider their implementation costs on a per-mile basis, and thus those estimates are not presented in this summary.



Portland, Oregon

The *2010 Oregon Rail Study* provided cost estimates for improving existing intercity passenger rail service between Portland and Eugene. Two alternatives, the existing Union Pacific Railroad and the alternative Oregon Electric Railroad route, were considered. The *Study* estimated that the required investment to achieve its service goals on the existing Union Pacific route would be more than \$2.17 billion (2016 dollars), or approximately \$17.5 million per mile (2016 dollars) over the 124-mile route. ODOT reported that the cost would probably be higher to achieve the desired average speed (65 mph) over the route based on feedback received from Union Pacific after the study was released. The required investment for the Oregon Electric Railroad route was estimated at more than \$1.88 billion (2016 dollars), or approximately \$15.2 million per mile (2016 dollars).

Projected Funding Sources

No specific funding sources have been identified for future Pacific Northwest high-speed rail system upgrades beyond those listed in the next section.

Recent Funding Awards

The states of Oregon and Washington have both received funding awards in recent years associated with further development of the current Pacific Northwest Corridor service and planning for future high-speed service. These awards include:

- Oregon: \$11,156,158 from the *American Recovery and Reinvestment Act of 2009* funds for station improvements and project-level environmental documentation for various projects to increase rail capacity in the Portland to Eugene segment.
- Oregon: \$5,000,000 from FY 2010 high-speed rail appropriations for rail planning activities in the state, including a service development plan and Tier 1 EIS for the Portland to Eugene segment.
- Oregon: \$3,967,248 from FY 2010 high-speed rail appropriations for preliminary engineering and environmental analysis for renovations to Portland Union Station.
- Washington: \$751,575,100 from the *American Recovery and Reinvestment Act of 2009* funds for Service Block 2 projects between Seattle and Portland. Project include rerouting existing Amtrak Cascades service, constructing bypass tracks to allow 79 mph maximum speed, and six daily round trips.
- Washington: \$15,000,000 from the *American Recovery and Reinvestment Act of 2009* funds to construct a grade-separated railroad crossing over the freight railroad mainline serving the Port of Vancouver (Washington). Project expected to improve Amtrak Cascades on-time performance by up to 8 percent.
- Washington: \$9,000,000 from FY 2009 high-speed rail appropriations for construction of a new station in Tukwila, Washington, in conjunction with Sound Transit commuter rail service.
- Washington: \$3,258,836 from FY 2009 high-speed rail appropriations to extend an existing siding located on the Amtrak Cascades route near Mount Vernon, Washington.
- Washington: \$18,293,407 from FY 2010 high-speed rail appropriations for rehabilitation of Seattle's King Street Station, including expanded passenger facilities and seismic retrofitting.
- Washington: \$400,000 from FY 2010 high-speed rail appropriations for development of a comprehensive state rail plan that combines and updates the State's current Freight Rail Plan and Passenger Rail Plan.

Sources: *Washington State DOT ARRA High-Speed Rail Funding Applications, 2010 Oregon Rail Study, Federal Railroad Administration*

TRANSPORTATION SYSTEM IMPACTS

Ridership Estimates

The December 2008 *Amtrak Cascades Mid-Range Plan* provided ridership estimates for improved intercity passenger rail service on the Vancouver to Portland segments of the Pacific Northwest high-speed rail system. Ridership forecasts were developed for 2017 for four scenarios: maintaining current operations, minimum capital investment, supply meeting demand, and no financial constraints. Each scenario included improvements to travel time, service reliability, service frequency, and equipment. For the minimum capital investment strategy, the ridership forecast for the year 2017 was 783,000 passengers, 21 percent higher than the baseline scenario of maintaining current operations. For the supply meeting demand scenario, the ridership forecast was 822,000 passengers, 5 percent higher than the minimum capital investment scenario and 27 percent higher than the baseline scenario. For the unconstrained scenario, the ridership forecast was 890,000 passengers, 8 percent higher than the supply meeting demand scenario and 37 percent higher than the baseline scenario.

The *2010 Oregon Rail Study* provided ridership estimates for improved intercity passenger rail service on the Portland to Eugene segment of the Pacific Northwest high-speed rail system. Increasing train speed and service frequency (from two to six trains per day) was projected to increase ridership by approximately 120 percent (more than double) between 2008 and 2030. Increasing train speed but retaining the same service frequency (two trains per day) would result in a slower ridership growth, approximately 85 percent between 2008 and 2030. The on-going Tier 1 EIS being developed for the Portland to Eugene corridor is expected to generate new ridership estimates for improved rail service in this segment.

Mode Choice

The November 2010 Finding of No Significant Impact (FONSI) for the Washington State Segment of the Pacific Northwest Rail Corridor reported that implementation of the projects outlined in the Environmental Assessment would reduce automobile trips along the corridor. In the first year of the program (2018), the study estimates that 476,269 automobile trips would be reduced. This figure was projected to grow to 507,182 automobile trips by 2022 and 555,425 automobile trips by 2027. These reductions were estimated to reduce automobile trips on the parallel

I-5 route by approximately 3 percent, and reduce fuel use by between 1.9 and 2.2 million gallons. No similar estimates were developed for the Portland to Eugene segment.

Connectivity with Other High-Speed Rail Systems

The Pacific Northwest high-speed rail system does not connect to any other proposed U.S. high-speed rail system. Connections to the California high-speed rail system and others would be provided via the conventional Amtrak long-distance route system.

Sources: *Amtrak Cascades Mid-Range Plan, Pacific Northwest Rail Corridor Washington State Segment Program Environmental Assessment FONSI, 2010 Oregon Rail Study, Oregon DOT Passenger Rail Program Website*

GOVERNANCE

Intercity passenger rail planning and implementation activities in the Pacific Northwest high-speed rail system have been coordinated primarily by the Washington State Department of Transportation Rail and Marine Office and the Oregon Department of Transportation Passenger Rail Program. Starting in October 2013, the federal government will discontinue funding support for intercity passenger rail service; consequently, Washington and Oregon must absorb those costs to maintain the service. As part of their efforts to reduce costs, increase ridership, and reduce taxpayer subsidies, WSDOT and ODOT entered into a Memorandum of Understanding (MOU) in Spring 2012 to establish expectations for joint funding and oversight responsibilities for Amtrak Cascades. The Corridor Management Work Plan (CMP) will guide Washington and Oregon as they implement the corridor approach. The CMP will establish a procedural framework for how Washington and Oregon will jointly manage and implement capacity and efficiency improvements to Amtrak Cascades. It will also serve as a work plan for: 1) creating an interagency agreement to formally implement joint management and funding; and 2) creating a strategic plan to set policy for the corridor. The CMP will be completed in January 2013.

Sources: *Washington State Department of Transportation Rail and Marine Office Website, Oregon Department of Transportation Passenger Rail Program Website*

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